IN THE CLAIMS

1-2. (cancelled)

3. (currently amended) A method for producing an image of an object utilizing a computed tomography (CT) imaging system, said method comprising:

axially scanning an object utilizing the CT imaging system to obtain more than 180° of projection data of the object;

weighting the projection data according to projection location and pixel location in an image to be reconstructed; and

reconstructing the image of the object utilizing the weighted projection data;

wherein said weighting the projection data according to the projection location comprises reducing the weighting of contributions of projections 180° apart to reconstructed image pixels

and further ~~A method in accordance with Claim 2~~ wherein weighting the projection data comprises applying a weight $w(\phi-\theta)=w(\alpha)$ defined by a relationship written as:

$$w(\alpha)=\begin{cases}1-3\left|\frac{\alpha}{\eta}\right|^2-2\left|\frac{\alpha}{\eta}\right|^3, & \text{if } |\alpha|\le\eta\\ 1, & \text{otherwise,}\end{cases}$$

wherein $\eta$ is a parameter that specifies a transition region;

$\phi$ is an angle of an image pixel in a polar coordinate system; and

$\theta$ is the projection angle.

4. (original) A method in accordance with Claim 3 wherein $\eta=\pi/4$.

5. (original) A method in accordance with Claim 3 wherein said reconstructing an image of the object utilizing the weighted projection data comprises reconstructing the image in accordance with a relationship written as:

$$f(r,\phi,z) = \int_{\phi-\Gamma}^{\phi+\Gamma}\int_{\infty}^{\infty} w(\phi-\theta)P(\omega,\theta,z')|\omega|e^{j2\pi\omega t}\,d\omega d\theta$$

wherein $\Gamma$ is a parameter that specifies the projection data range used in the reconstruction, and $\Gamma > \pi/2$.

6. (original) A method in accordance with Claim 5 wherein $\Gamma$ is a function of image slice location relative to a center plane of a fan beam of a radiation source of the CT imaging system.

7. (original) A method in accordance with Claim 6 wherein $\Gamma$ is larger for image slices closer to the center plane.

8. (original) A method in accordance with Claim 5 wherein $\eta = \pi/4$.

9-10. (cancelled)

11. (currently amended) A method for producing an image of an object utilizing a computed tomography (CT) imaging system, said method comprising:

axially scanning an object utilizing the CT imaging system to obtain more than 180° of projection data of the object;

weighting the projection data according to projection location; and

reconstructing an image of the object utilizing the weighted projection data;

~~A method in accordance with Claim 10~~ wherein weighting of a projection for a part of an image closest to a radiation source of the CT imaging system is less than the weighting of the other half of the image.

12. (original) A method for producing an image of an object utilizing a computed tomography (CT) imaging system, said method comprising:

axially scanning an object utilizing the CT imaging system to obtain more than 180° of projection data of the object;

selecting a range of projections in accordance with locations of pixels of an image of the object to be reconstructed; and

reconstructing the image of the object utilizing the selected range of projections.

13. (original) A method in accordance with Claim 12 wherein selecting a range of projections comprises selecting a range of projections between $\phi - \pi/2$ to $\phi + \pi/2$, wherein $\phi$ is a polar angle of said pixels.

14-15. (cancelled)

16. (currently amended) A computed tomography imaging system having a detector array and an radiation source, wherein to produce an image of an object, said system is configured to:

axially scan an object to obtain more than 180° of projection data of the object;

weight the projection data according to projection location and pixel location in an image to be reconstructed; and

reconstruct the image of the object utilizing the weighted projection data;

wherein to weight the projection data according to the projection location, said system is configured to reduce the weight of contributions of projections 180° apart to reconstructed image pixels; and ~~A system in accordance with Claim 15~~ wherein to weight the projection data, said system is configured to apply a weight $w(\phi - \theta) = w(\alpha)$ defined by a relationship written as:

$$w(\alpha) = \begin{cases} 1 - 3\left|\frac{\alpha}{\eta}\right|^2 - 2\left|\frac{\alpha}{\eta}\right|^3, & \text{if } |\alpha| \le \eta \\ 1, & \text{otherwise,} \end{cases}$$

wherein $\eta$ is a parameter that specifies a transition region;

$\phi$ is the angle of an image pixel in a polar coordinate system; and

$\theta$ is the projection angle..

17. (original) A system in accordance with Claim 16 wherein $\eta = \pi/4$.

18. (original) A system in accordance with Claim 16 wherein to reconstruct an image of the object utilizing the weighted projection data, said system is configured to reconstruct the image in accordance with a relationship written as:

$$f(r,\theta,z) = \int_{\phi-\Gamma}^{\phi-\Gamma} \int_{-\infty}^{\infty} w(\phi-\theta) P(\omega,\theta,z') |\omega| e^{j2\pi\omega t} d\omega d\theta$$

wherein $\Gamma$ is a parameter that specifies the projection data range used in the reconstruction, and $\Gamma > \pi/2$.

19. (original) A system in accordance with Claim 18 wherein $\Gamma$ is a function of image slice location relative to a center plane of a fan beam of the radiation source of the CT imaging system.

20. (original) A system in accordance with Claim 19 wherein $\Gamma$ is larger for image slices closer to the center plane.

21. (original) A system in accordance with Claim 18 wherein $\eta = \pi/4$.

22-23. (cancelled)

24. (currently amended) A computed tomography imaging system having a detector array and an radiation source, wherein to produce an image of an object, said system is configured to:

axially scan an object to obtain more than 180° of projection data of the object;

weight the projection data according to projection location; and

reconstruct an image of the object utilizing the weighted projection data;

~~A system in accordance with Claim 23~~ wherein weighting of a projection for a part of an image closest to a radiation source of the CT imaging system is less than the weighting of the other half of the image.

25. (original) A computed tomography imaging system having a detector array and an radiation source, wherein to produce an image of an object, said system is configured to:

axially scan an object to obtain more than 180° of projection data of the object;

select a range of projections in accordance with locations of pixels of an image of the object to be reconstructed; and

reconstruct the image of the object utilizing the selected range of projections.

26. (original) A system in accordance with Claim 25 further configured to select said range of projections between $\phi - \pi/2$ to $\phi + \pi/2$, wherein $\phi$ is a polar angle of said pixels.

27. (New) A method in accordance with Claim 11 wherein said reconstructing an image of the object comprises reconstructing an image of the object utilizing the weighted projection data in a Cartesian coordinate system.

28. (New) A method in accordance with Claim 11 wherein said weighting the projection data comprises weighting the projection data according to projection location and pixel location.

29. (New) A system in accordance with Claim 24 configured to reconstruct an image of the object utilizing the weighted projection data in a Cartesian coordinate system.

30. (New) A system in accordance with Claim 24 wherein said projection data is weighted according to projection location and pixel location.